TABLE 10.—*Pressure and density of a cylindrical column of snow, Goldberg glacier, August, 1908.*

[Cross sectional area=1 square foot.]

Layer.	Depth.		Density.	Pressure.
	Cm.	*Feet.*		*Pounds.*
1	12.5	0.41	0.280	7.16
2	37.5	1.23	0.388	27.62
3	62.5	2.05	0.515	53.38
4	87.5	2.87	0.632	85.73
5	112.5	3.69	0.608	116.85
6	137.5	4.51	0.536	144.29
7	162.5	5.33	0.534	171.63
8	187.5	6.15	0.542	199.37
9	219.5	6.97	0.556	227.83
10	237.5	7.79	0.556	256.29
11	262.5	8.61	0.583	286.18
12	287.5	9.43	0.578	315.72
Bottom layer	312.5	10.25	0.607	.....

It is clear that despite the great pressure—more than 315 pounds per square foot—exerted by the overlying layers of snow upon the bottom layer, its density, 0.607, is less than that of the fourth and fifth layers, upon which the pressures were only 53 and 86 pounds, respectively.

It seems to us that any attempt to estimate the density of the lowest layers of a snow cover of some depth at the close of winter from measurements of the *pressure* exerted by the snow in the top layer is about as safe a proceeding as that of estimating the density of the lowest layers of a sawdust cover in a sawmill where white pine, gum, mahogany, and teak lumber is milled indiscriminately, by computing the pressure of the top layer and deducing therefrom the probable density of the underlying layers.

CONCLUSIONS.

A careful and unbiased analysis of the foregoing data will, we believe, warrant the following conclusions:

1. That the average density of a snow cover at or near the close of winter depends primarily, if not chiefly, on the various atmospheric conditions (particularly as to freezes and rains) under which the several layers have been deposited, and the age of the snow cover.

2. That the density of snow in late spring does not vary directly as the depth, pressure, or altitude of the cover.

3. That in a given snow cover strata having abnormally high or low densities (relatively to the average density of the whole cover) may occur in open as well as forested areas, and in the upper, middle, and lower layers.

4. That to deduce, by formula, the density of the lowest layers of a snow cover from measurements of the depth or pressure of its top layer is not a practical proposition, except, perhaps, in the case of a homogeneous snow cover.

My colleagues of the Reno station, Messrs. W. Bailey and O. H. Hammonds, whose kind assistance[15] in the proof reading of the tables and the translating of articles by foreign writers is gratefully acknowledged, concur as to the conclusions reached by the writer of this paper.

MEAN LAKE LEVELS DURING SEPTEMBER, 1916.

By UNITED STATES LAKE SURVEY.

[Dated: Detroit, Mich., Oct. 5, 1916.]

The following data are reported in the "Notice to Mariners" of the above date:

Data.	Lakes.			
	Superior.	Michigan and Huron.	Erie.	Ontario.
Mean level during September, 1916:	*Feet.*	*Feet.*	*Feet.*	*Feet.*
Above mean sea level at New York	603.88	580.76	572.33	246.69
Above or below—				
Mean stage of August, 1916	+0.15	−0.28	−0.47	−0.67
Mean stage of September, 1915	+1.48	+0.82	+0.13	+1.24
Average stage for September, last 10 years	+1.27	+0.10	−0.02	+0.59
Highest recorded September stage	−0.20	−2.67	−1.61	−0.92
Lowest recorded September stage	+2.39	+1.10	+1.05	+2.69
Average relation of the September level to:				
August level	±0.0	−0.2	−0.3	−0.4
October level	±0.0	+0.2	+0.2	+0.4

[15] The author further wishes to acknowledge the assistance received from his wife while preparing and revising this paper.